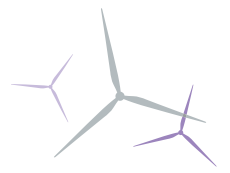


Sheringham Shoal

by Scira Offshore Energy



Summer 2012

NEWSLETTER

Wind farm construction in final stage

At the time of printing, the Sheringham Shoal Offshore Wind Farm had 80 of its 88 turbines installed, meaning the construction phase is definitely in its final stages.

Both turbine installation jack-up vessels – *Endeavour* and *Seajacks Leviathan* – continue to ferry turbines, two at a time, from Great Yarmouth to the site and erect them on top of the waiting transition pieces. It is anticipated all the turbines will be in place by the end of July.

Once installed, the turbines go through a rigorous commissioning process taking around three weeks, to prepare them to start generating power.

Also in the field, the wind farm stalwart 87m *Toisa Warrior* has been joined by 87m *MV Elektron* roll on/roll off carrier to trench and bury the cables that are already in place. *MV Elektron* carried out the work on the export cable closest to Weybourne Beach enabling fishermen and walkers to take a closer look. A third



Seajacks Leviathan.



With 88 turbines installed, construction of the Sheringham Shoal Offshore Wind farm is nearing completion.

vessel, *Maersk Launcher*, will also join the trenching team for the summer.

The final stage of construction is the installation of further scour protection – placing rocks at the base of the foundations to protect them from the erosive movement of water on the seabed.

The vessel *Jan Steen* finished placing smaller rocks, known as a protection layer at the base of the foundations, in June. The *Ham 602* will continue to place the larger rocks, or armour layer, to complete the process in August. The rocks have been brought from Norway on three bulk carriers *Henriette*, *Norne* and *Dina*, which moored just outside the wind farm site.

First stone laid at Egmere base

One of the owners of North Norfolk's Walsingham Estate, placed the first stone in the wall of Scira's operational base at a small ceremony to mark a key stage in the building's construction.

The laying of the first stone by Elizabeth Meath Baker was carried out with a specially produced ceremonial trowel at the construction site, in Egmere, three miles south of Wells-next-the-Sea. Together with her husband Clovis, Mrs Meath Baker owns the estate, which will be home to the Scira Offshore Energy team from early next year.

The base has taken shape rapidly since its construction began in March and the ceremony marked the milestone of the erection of the steel frame.

The facility is on schedule to be completed by the end of the year and is being constructed by Swaffham-based Mansell Construction.

Local sub-contractors being used are all from within a 30 mile radius of the site.



Elizabeth Meath Baker lays the first stone.

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Heavy process to install gentle giants

Graceful white wind turbines standing tall above the waves are the symbols most synonymous with offshore wind farms and for the past 12 months, they have gradually been appearing on the North Norfolk horizon.

While they may look like gentle giants, their installation involves a heavy duty, potentially dangerous construction process where health and safety is of paramount importance.

Pre-assembled in Esberg, Denmark by contractor Siemens, the turbines are transported first to Great Yarmouth and then – two at a time – to Sheringham Shoal. They arrive in six pieces – the tower base complete with transformer and power unit; the tower top including ladders, services lifts and cables; the nacelle which is the heaviest section and includes the hub; and the three fibreglass and wood blades.

It can take up to five hours for the jack-up installation vessels – Endeavour and Leviathan – to sail to the Greater Wash site and get into position, ensure the four legs are sturdy and secure on the seabed before jacking-up in readiness for the installation process.

First to be installed is the tower base, which is hooked on to a crane then lifted over the water to the yellow-transition piece where waiting technicians bolt it into position. Around 120 bolts are first electrically tightened before hydraulic tools are used to correct the tension.

Once the tower base is secured, the crane hooks are released and the crane operator swings it back to the vessel to collect the tower top, which is then lifted over and bolted into position by the team who have moved up from the tower base.

The 200 tonne nacelle is next to be lifted, positioned and bolted on using the same process. The crane holds the weight until

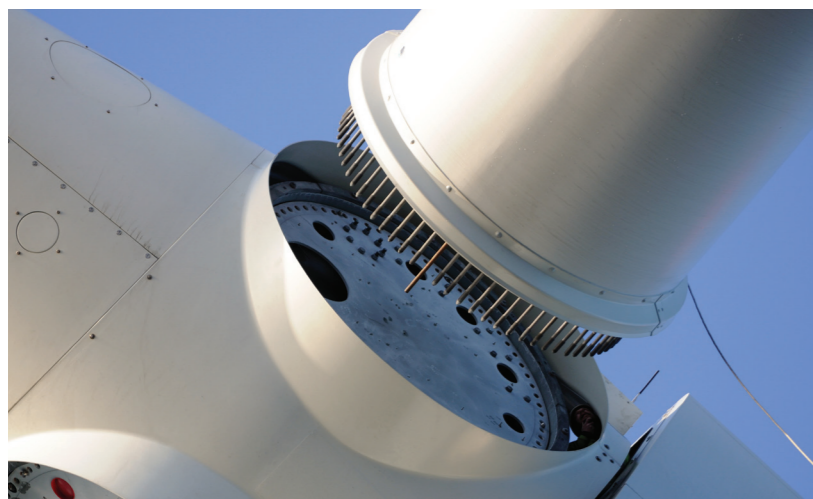
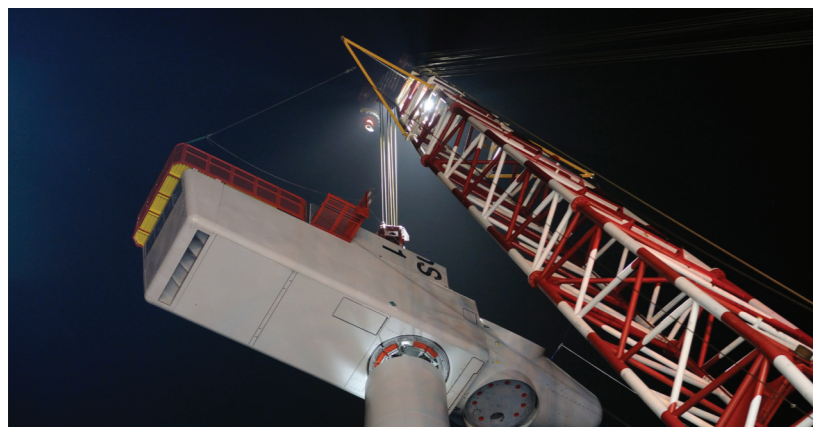


Safety awareness is key for the turbine installation process.

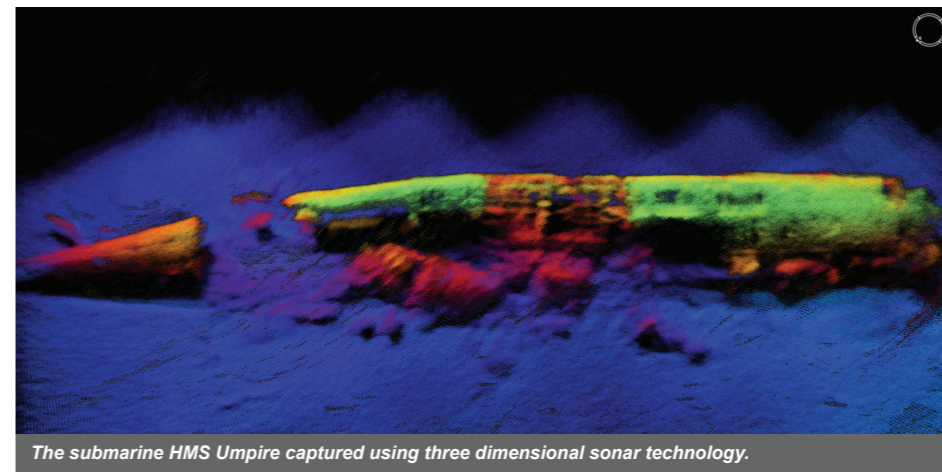
the nacelle is fully secure and then moves back to the vessel for the final phase – the blade installation.

Installing blades can only be done in calm weather as it is a precision operation whereby a guide pin on each blade has to be lined up and threaded into the correct hole on the nacelle. A blade yoke, rather than crane hooks, holds each blade until it is bolted in to place by technicians inside the nacelle. The blade is then remotely released to enable the second and third blades to be installed.

The finale of the process is the completion of tensioning the bolts and preparing the cables in readiness for completion and commissioning of the turbine.



Different phases of turbine installation including lifting the nacelle on to the tower (top left) and installing blades (above and right).



The submarine HMS Umpire captured using three dimensional sonar technology.

Marine archaeology under the sonar

Recording marine archaeology – including sunken ships, planes and submarines – has been an unusual side benefit of the offshore wind industry and during the Sheringham Shoal's consenting phase around 20 wrecks were identified on the 35km² site.

During construction it has been vital to try to avoid these wrecks, although in June the rock placement work gave the project team the opportunity to get close enough to utilise a unique sonar technology to record the current state of the HMS Umpire, sunk in 1941 following a collision with an armed escort trawler.

Twenty-two men lost their lives in the accident and the wreck is now designated as a protected place under the Protection

of Military Remains Act 1986.

To record its location and condition, the project team employed a new technology called the 3D Echoscope, which was able to generate more than 16,000 beams at the same time, to produce instant three-dimensional sonar images of the submarine. This data can be used in many ways as it means that live moving images can be viewed and interpreted easily by non-surveyors in real time.

Bursary for budding engineers

Young people from low-income families who would like to study engineering at one of three Norfolk colleges can now apply for a bursary to support their studies following the launch of a new scheme by Scira.

The colleges of West Anglia in Kings Lynn, and Great Yarmouth and City College in Norwich have agreed to take part in the bursary scheme. Each year twenty students will receive a bursary of £500 per annum to study the Business and Technology Education Council Extended Diploma in Engineering Level 3 through to graduation.

The bursary scheme will be open to 16 to 18 year olds living in Norfolk, and applications will be handled directly by the colleges.

It provided the team on the vessel Jan Steen with good visualisations of the nearby work environment, but has been used elsewhere to help improve accuracy and efficiency, and reduce health and safety risks for subsea projects.

Safer transfer system adopted

Scira will utilise a new UK-designed vessel transfer system to provide its wind farm technicians with safe and reliable access to wind turbines in a range of weather conditions.

The safe transfer of technicians from boats to wind turbines is a key challenge and this system, known as MaXcess and developed by Northumberland-based OSBIT Power Limited, was chosen for Sheringham Shoal following extensive trials.

Sheringham Shoal's Marine Operations Manager, Meindert Jan van der Velde said accessing turbines is the most hazardous challenge during a wind farm's construction and operation, but this new system provides an innovative solution.



The new transfer system MaXcess aims to improve safety and efficiency.

Scira says thank you Wells-next-the-Sea

After more than six years of planning, development and construction, the Sheringham Shoal Offshore Wind Farm is almost complete but it would not have been achievable without the support and involvement of the people and businesses of Wells-next-the-Sea.

In recognition of this support, the team from Scira wanted to show its appreciation by helping to make the first day of the 2012 Wells Carnival, Saturday 28 July, extra special.



One of the Cirque Bijou performances to be seen at Wells Carnival's opening day.

By working closely with the Carnival committee, supporting a number of regular activities, including the popular Raft Race, and also by bringing in fantastic guest performers from Cirque Bijou, Scira would like to say a huge thank you to everyone who lives, works or visits Wells-next-the-Sea.

It will also be a celebration of a year since the first time electricity was produced at the wind farm, which will operate out of the outer harbour for at least the next 50 years.

General Manager Einar Strømsvåg said that the team from Scira looks forward to a continued cooperation with the community it is now proud to be part of.

A formal opening of the wind farm will be held later in the year.

Questions from the community

Why are some turbine blades turning and others standing still?

Once turbines are installed at the wind farm, they need to undergo mechanical and electrical completion, commissioning and final verifications before they start generating power. This process normally takes three weeks. When in operation, turbine blades may stop turning during maintenance, if the wind speeds are too low or too high or while under curtailment, or restrictions. At the moment Sheringham Shoal is curtailed due to work being undertaken by UK Power Networks on a new transformer and associated equipment at Norwich's main substation. This work will increase the security of delivery for the consumers in Norfolk so is a positive development, but in the short term it means some operational turbines are in effect switched off.

Five funding grants approved

Almost £45,000 in funding grants has been earmarked for five North Norfolk organisations and initiatives following the most recent Sheringham Shoal Community Fund meeting.

Funding was granted to install solar hot water heating for the Wells-next-the-Sea community swimming pool at Alderman Peel High School.

Proposals from both Blakeney and Bodham Parish Council's were approved to further the proposal on the possibility

of harbour dredging at Blakeney Harbour and to help Bodham Parish Council with the regeneration of Bodham Common into a lowland heath. Additionally, the North Norfolk Surf Life Saving Club will receive assistance to establish a life saving youth training programme.

Finally, St Seraphim's Trust in Walsingham will receive monies to fund a range of materials and plants to further develop the community garden

If you would like to find out more or submit an outline proposal form, you can visit www.norfolkfoundation.com for details.

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The Sheringham Shoal Offshore Wind Farm is owned equally by Statoil and Statkraft through the joint venture company, Scira Offshore Energy Limited. Statoil is the operator for the project during the development phase and Scira will be the operator of the wind farm when completed.



Turbines may be turned off for a number of reasons.

If you would like a question answered in the next newsletter, please email info@scira.co.uk